

WHAT IS CLAIMED IS:

1. A display driver apparatus for driving a display comprising a plurality of pixels, each of which is located at a respective one of a plurality of intersections formed between one of a plurality of common electrodes and one of a plurality of segment electrodes, wherein an orientation state of an electro-optical material of each pixel is controlled by a voltage applied to it, the display driver apparatus comprising:

10 a common electrode drive device that supplies a scanning signal for simultaneously selecting L common electrodes, where L is a natural number and $L \geq 2$;

15 a segment electrode drive device that supplies a data signal to each of the plurality of segment electrodes;

a storage medium from which N-bit display data are simultaneously read out for each of the plurality of segment electrodes; and

20 15 a decoder having a plurality of sub-decoders and that divides the N-bit display data simultaneously read out from the storage medium into (N/L) -bit data units, decodes the (N/L) -bit data units, and outputs a voltage to be applied to each of the segment electrodes;

wherein

25 20 in a first mode, the N-bit display data provides 2^A display gradients for each of L pixels on each of the segment electrodes, where $A = (N/L) \geq 2$, and an output voltage is output from a selected one of the sub-decoders in each of A divided periods of one horizontal scanning period, and

in a second mode, the N-bit display data provides 2^B display gradients for each of $n \times L$ pixels on each of the segment electrodes, where $1 \leq B = A/n$ and $n \geq 2$, and an output voltage is output from a selected one of the sub-decoders every n horizontal scanning periods.

2. A display driver apparatus according to claim 1, further comprising a terminal
that selects one of the first mode and the second mode.
3. A display driver apparatus according to claim 1, further comprising an
interface circuit for inputting the N-bit display data from an external source,
5 wherein a mode selection signal for selecting one of the first mode and the second
mode is input through the interface circuit.
4. A display driver apparatus according to claim 1, wherein in the first mode the
N-bit display data provides four display gradients for each of L pixels on each of the
segment electrodes.

10 5. A display driver apparatus according to claim 4, wherein in the second mode
the N-bit display data provides two display gradients for each of 2L pixels on each of
the segment electrodes.

15 6. An electro-optical device comprising a display driver apparatus according to
claim 1.

7. An electronic device comprising an electro-optical device according to claim 6.

20 8. A method for driving a display comprising a plurality of pixels, each of which is
located at a respective one of a plurality of intersections formed between one of a
plurality of common electrodes and one of a plurality of segment electrodes, wherein
an orientation state of an electro-optical material of each pixel is controlled by a
voltage applied to it, the display driving method comprising the steps of:

a common electrode drive device that supplies a scanning signal for
simultaneously selecting L common electrodes, where L is a natural number and L
 ≥ 2 ;

supplying a data signal to each of the plurality of segment electrodes;

25 simultaneously reading N-bit display data for each of the plurality of
segment electrodes; and

dividing each read N-bit display data into (N/L) -bit units, decoding the (N/L) -bit data units, and output a voltage to be applied to each of the segment electrodes;

wherein

5 in a first mode, the N-bit display data provides 2^A display gradients for each of L pixels on each of the segment electrodes, where $A = (N/L) \geq 2$, and an output voltage is output in each of A divided periods of one horizontal scanning period, and

10 in a second mode, the N-bit display data provides 2^B display gradients for each of $n \times L$ pixels on each of the segment electrodes, where $1 \leq B = A/n$ and $n \geq 2$, and an output voltage is output every n horizontal scanning periods.

15 9. A display driving method according to claim 8, further comprising the steps of inputting the N-bit display data from an external source, and inputting a mode selection signal for selecting one of the first mode and the second mode from an external source.

10 10. A display driving method according to claim 8, wherein in the first mode the N-bit display data provides four display gradients for each of L pixels on each of the segment electrodes.

20 11. A display driving method according to claim 10, wherein in the second mode the N-bit display data provides two display gradients for each of $2L$ pixels on each of the segment electrodes.